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## NTE1892 & NTE1892A Integrated Circuit Dual Bi-Directional Motor Driver with Brake Function and Thermal Shutdown

### Description:

The NTE1892 and NTE1892A are bi-directional motor drivers in a 12-Lead SIP type package and consists of two full bridge drivers designed for use in a two DC motor control circuit.

### Features:

- Two Separate Full Bridge Drivers (Only one circuit can be switched by the Select (S<sub>E</sub>) Input).
- Wide Operating Voltage Range: V<sub>CC</sub> = 4V to 16V
- TTL, PMOS, CMOS Outputs, Capable of Direct Drive
- Low Output Saturation Voltage
- Built-in Clamp Diode
- High Output Drive Current: I<sub>Omax</sub> = ±2A
- Braking Mode Input
- Internal Thermal Shutdown Protection

### Applications:

- Audio Tape Deck Player
- Radio/Cassette Player
- Video Cassette Recorder
- Home Equipment Use

### Absolute Maximum Ratings: (T<sub>A</sub> = +25°C unless otherwise specified)

Supply Voltage 1, V <sub>CC(1)</sub> .....	-0.5V to +18V
Supply Voltage 2 ( <b>NTE1892 Only</b> , Note 1), V <sub>CC(2)</sub> .....	-0.5V to +18V
Driver Supply Voltage, V <sub>CC'</sub> .....	-0.5V to +18V
Input Voltage, V <sub>i</sub> .....	0 to V <sub>CC</sub> V
Output Voltage, V <sub>O</sub> .....	-2V to V <sub>CC</sub> +2.5V
Peak Output Current (t <sub>op</sub> = 10ms, relative cycle 0.2Hz Max), I <sub>Omax</sub>	
NTE1892 .....	±2.0A
NTE1892A .....	±1.2A
Continuous Output Current 1, I <sub>O(1)</sub> .....	± 330mA
Continuous Output Current 2 ( <b>NTE1892 Only</b> , Note 1), I <sub>O(2)</sub> .....	± 600mA
Power Dissipation (T <sub>A</sub> = +75°C), P <sub>D</sub>	
NTE1892 .....	1.6W
NTE1892A .....	830mW
Operating Temperature Range, T <sub>opr</sub>	
NTE1892 .....	-10° to +75°C
NTE1892A .....	-20° to +75°C
Storage Temperature Range, T <sub>stg</sub> .....	-55° to +125°C

Note 1. With external heat sink (3000mm<sup>2</sup> x 1.5mm)

**Recommended Operating Conditions:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	$V_{CC}$		4	12	16	V
Output Current	$I_O$		-	-	$\pm 300$	mA
High-Level Input Voltage	$V_{IH}$	Input $S_1, S_2, S_E$	2	-	$V_{CC}$	V
Low-Level Input Voltage	$V_{IL}$	Input $S_1, S_2, S_E$	0	-	0.4	V
Motor Braking Interval NTE1892	$t_s$		10	100	-	ms
NTE1892A			100	-	-	ms
Thermal Shutdown Temperature	$t_{j(\text{shut})}$	$V_{CC} \geq 7V$	-	150	-	$^\circ\text{C}$

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Output Leakage Current	$I_{O(\text{LEAK})}$	$V_{CC} = V_{CC'} = 18V, V_{S1} = V_{S2} = 0V, V_{SE} = 0V \text{ or } 2V$	$V_O = 18V$	-	-	100	$\mu\text{A}$
			$V_O = 0V$	-	-	-100	$\mu\text{A}$
High-Level Output Voltage	$V_{OH}$	$V_{CC} = V_{CC'} = 12V$	$I_{OH(1)} = -200\text{mA}$	10.8	-	-	V
			$I_{OH(1)} = -500\text{mA}$	10.7	-	-	V
Low-Level Output Voltage	$V_{OL}$	$V_{CC} = V_{CC'} = 12V$	$I_{OL} = 200\text{mA}$	-	-	0.5	V
			$I_{OL} = 500\text{mA}$	-	-	1.35	V
High-Level Input Current	$I_{IH}$	$V_{CC} = V_{CC'} = 12V, V_i = 2V$	50	-	120	$\mu\text{A}$	
Low-Level Input Current	$I_{IL}$	$V_{CC} = V_{CC'} = 12V, V_i = 0V$	50	-	120	$\mu\text{A}$	
Supply Current	$I_{CC}$	$V_{CC} = V_{CC'} = 12V$	$V_{SE} = 0V, V_{S1} = V_{S2} = 0V$	-	-	10	mA
			$V_{SE} = 0V, V_{S1} = 0V, V_{S2} = 2V$	-	-	20	mA

**Function:**

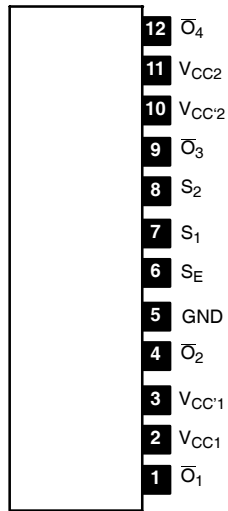
The NTE1892/NTE1892A, two full bridge motor driver, has the logic circuitry and the quasi-darlington power driver for bi-directional control of two DC motors operating at currents up to 2A.

The input  $S_E$  selects one of the bridges and  $S_1$  and  $S_2$  determines the output polarity.

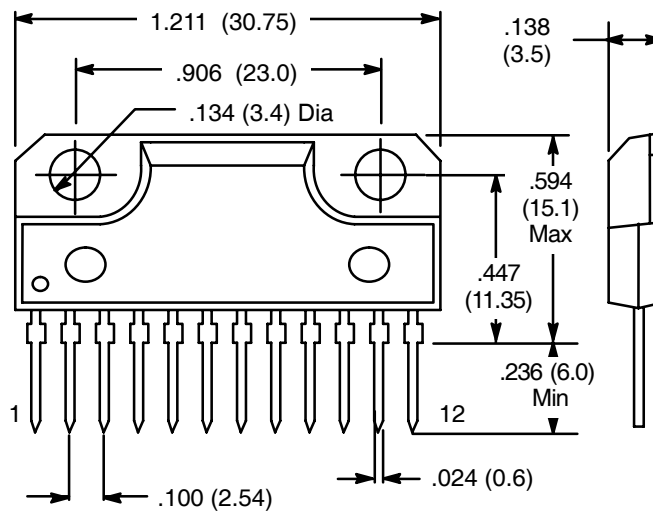
**Logic Truth Table:**

Input			Output				Note	
$S_E$	$S_1$	$S_2$	$\bar{O}_1$	$\bar{O}_2$	$\bar{O}_3$	$\bar{O}_4$	Output $\bar{O}_1, \bar{O}_2$	Output $\bar{O}_3, \bar{O}_4$
0	0	0	OFF	OFF	OFF	OFF	OPEN	OPEN
0	1	0	1	0	OFF	OFF	Motor Forward	OPEN
0	0	1	0	1	OFF	OFF	Motor Reverse	OPEN
0	1	1	0	0	OFF	OFF	BRAKING	OPEN
1	0	0	OFF	OFF	OFF	OFF	OPEN	OPEN
1	1	0	OFF	OFF	1	0	OPEN	Motor Forward
1	0	1	OFF	OFF	0	1	OPEN	Motor Reverse
1	1	1	OFF	OFF	0	0	OPEN	BRAKING

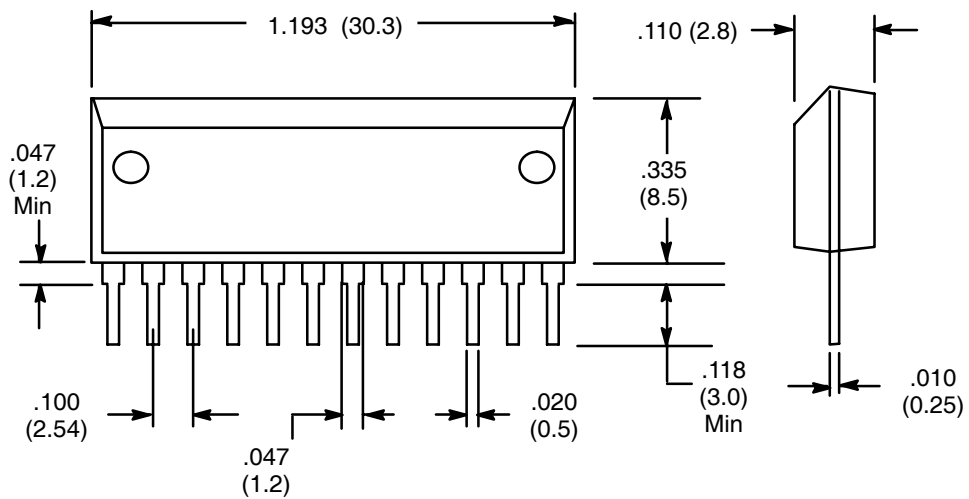
**Pin Connection Diagram**  
(Front View)



**NTE1892**



**NTE1892A**



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